



Early Childhood Visual Arts Education: Teachers' Content Knowledge, Pedagogical Content Knowledge, and Challenges

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Abstract In the past, visual arts education in Hong Kong was not considered an important area of early childhood education. While the Hong Kong kindergarten curriculum has recently been updated to encourage creativity, there remains a lack of adequate visual arts education for young children. This deficiency stems from the fact that the visual arts receive minimal attention within Hong Kong teacher education programs. Little research has been conducted on how visual arts education is actually delivered in local kindergarten classrooms in Hong Kong and what kinds of artistic knowledge and skills kindergarten teachers need. Therefore, this study aimed to investigate kindergarten teachers' content knowledge and pedagogical content knowledge in early visual arts education (EVAE) and to identify the challenges they faced in teaching visual arts to children. The study surveyed 342 in-service kindergarten teachers in Hong Kong and conducted individual interviews with 12 participants. The findings revealed that Hong Kong kindergarten teachers generally performed well in terms of their pedagogical content knowledge, but they lacked content knowledge in various forms of early visual arts (EVA) and faced challenges in teaching visual arts effectively. This study has the potential to change how early childhood visual arts teaching is conceptualized and taught in Hong Kong and other Asian regions.

Keywords Content knowledge · Pedagogical content knowledge · Visual arts · Early childhood education

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Art plays a crucial role in allowing children to showcase their intellectual, emotional, and aesthetic capabilities (Wright, 2014). While earlier research has highlighted the significance of visual arts, which, like an early form of language, are a means for young children to communicate their ideas and emotions (Rudolph & Wright, 2015; Wright, 2014), visual arts education has been largely ignored (Leung, 2018; Lindsay, 2021). In 2017, the Hong Kong Kindergarten Education Curriculum Guide expanded the domain of “arts” to “arts and creativity,” placing an “emphasis on the learning elements of free expression and creativity” (Curriculum Development Council, 2017, p. 29). Nevertheless, there are barriers to changing the arts curriculum. Parents expect their children to concentrate on their academic studies and often resist attempts by schools to allocate time and resources to artistic activities. The kindergarten curriculum allocates minimal room for arts teachers, resulting in limited opportunities for children to engage in visual arts experiences (Bautista et al., 2018). Most kindergarten teachers in the field are still untrained in early visual arts (EVA) (Leung, 2018).

While several overseas studies have shown that arts participation has a strong positive influence on children's learning (Menzer, 2015), few studies have focused on arts-related studies in Hong Kong. Therefore, this study aimed to (1) examine teachers' content knowledge in early visual arts education (EVAE), (2) investigate their pedagogical content knowledge in EVAE classrooms, and (3) explore the perceived challenges of kindergarten teachers in teaching visual arts for children.

EVAE: Forms and Approaches

Spanning multiple decades, the literature has extensively discussed the concept of early childhood art, which encompasses children's expression through dance, drama, visual arts, and music (Bresler, 1998). Scholars have argued that every art form should be introduced to children in a balanced fashion (Bautista et al., 2018), as each form has distinct and specific positive effects on children's development and learning. For example, music can enrich children's learning through playful experiences, while visual arts can help children express themselves using non-verbal communication (Hanna, 2014). Along with painting and sculpture in fine arts, media art has recently become an important genre in the field of contemporary visual arts. Scholars have pointed out that digital devices can support children's learning in the arts (Falloon, 2013; Jowett et al., 2012; Marsh, 2012; Terreni, 2011). The interactive design of tablet computers, cameras, and video recorders allows children to produce more creative and open-ended content, such as drawings, photos, and movies (Stephen & Plowman, 2014).

In recent decades, there has been a paradigm shift in EVA teaching from directive to more creative and constructivist approaches. (Rosario & Collazo, 1981) conducted observations in kindergarten classrooms, discovering that teachers exerted control over children's art activities by tightly directing the choice of art materials and encouraging children to create artworks that closely resembled the models provided by them. (Jalongo, 1990) elucidated the tendency to undervalue expressive arts, stating that "some adults dichotomize achievement and artistic achievement, as if the former were nutritious vegetables and the latter, a rich dessert" (p. 196). (Bresler, 1993) identified the little-intervention orientation whereby teachers provide a variety of arts materials and an open environment without evaluating the outcomes and with the intention of fostering children's initiative and autonomy. However, according to (Wright, 2003), when teaching in arts classrooms lacks support, it can result in a *laissez-faire* attitude.

The concept of constructivist learning has sparked extensive research on how teachers approach facilitating children's visual arts. For example, (Epstein, 2001) proposed that in order to enable children to learn from their teachers and appreciate artworks in terms of visual arts elements and styles, it is important for teachers to acquire an extensive variety of artistic knowledge and skills. The results of (Eckhoff's, 2008) study, which investigated the teaching of visual arts in kindergarten, demonstrated that integrating meaningful and captivating art viewing experiences facilitated teachers' effective engagement in discussions and fostered art appreciation among young children. Additionally, (Eckhoff, 2012) highlighted the significance of conversation as a fundamental aspect of pedagogy for teaching visual arts

to young children. Even today, despite their beliefs in constructivist approaches to teaching and learning (Denee et al., 2023; Garvis & Pendergast, 2011; McArdle, 2012), teachers often follow direct teaching methods in arts education (Leung et al., 2023).

Teachers' Self-Efficacy in EVA

Despite the significance of visual arts pedagogies in early childhood education, teachers often express a lack of confidence in their ability to teach visual arts effectively (Garvis, 2012). Lindsay (2021) and McArdle (2016) pointed out that kindergarten teachers' self-efficacy beliefs and pedagogical choices are shaped by their personal experiences and beliefs regarding the subject knowledge. These beliefs develop through the course of their childhood, pre-service teacher education, and professional development. Numerous educational researchers have explored the intricate connections between teachers' beliefs and practices (e.g., Kim & Han, 2015). Extensive literature supports the notion that teachers' practices in kindergarten classrooms align with their beliefs about teaching (e.g., McMullen et al., 2006). Kindergarten teachers' personal experiences and beliefs, and even their anxieties toward visual arts (Smyth & Davis, 2016), may also affect their lack of visual arts disciplinary knowledge. Recently, many kindergarten teachers in Australia reported that they lacked confidence in their visual arts knowledge and techniques because they were not artistic at all (Lindsay, 2015). In a study conducted by (Hudson, 2006) in Australia, it was found that nearly half of the pre-service teachers expressed a lack of confidence in their artistic abilities, with some of them specifically expressing concerns that they "could not draw" (p. 6). Therefore, investigating the contextual beliefs that shape educational practices is of the utmost importance (Clark & Grey, 2013; Probine, 2016). In particular, it is essential to delve into the origins of educators' beliefs regarding their effectiveness in visual arts and their knowledge of pedagogical content in EVA (Smyth & Davis, 2016).

Content Knowledge and Pedagogical Knowledge in EVAE

Prior research has emphasized the importance of investigating the visual arts efficacy beliefs and pedagogical content knowledge of kindergarten teachers (Smyth & Davis, 2016). Moreover, (Garvis, 2009, p. 32) pointed out that it remains necessary to investigate the reciprocal relationships between educational contexts, personal factors, and self-efficacy. Quality EVAE depends on more than just self-efficacy. In addition to having confidence in their

own abilities, teachers must possess content knowledge, skills, and pedagogical knowledge to support children's engagement in meaningful learning experiences in the arts (Klopper & Power, 2010).

During the mid-1980s, Shulman and his colleagues provided a definition of teachers' content knowledge that refers to the knowledge of a subject or discipline (Grossman et al., 1989). However, (Shulman, 1986) argued that teaching a subject involves more than just acquiring content knowledge. Teachers also need to understand how to effectively deliver that knowledge through pedagogy, which is referred to as pedagogical content knowledge. Unsurprisingly, the pedagogical content knowledge conceptual framework has been adopted by scholars of arts education to elucidate the reasons behind the challenges faced by numerous kindergarten teachers when teaching visual arts to young children. (Eckhoff, 2011) discovered that kindergarten teachers demonstrated a lack of the required content knowledge and pedagogical content knowledge in arts, which impeded them from establishing meaningful visual art experiences in the classroom and limited their effectiveness in fostering children's procedural and declarative knowledge.

Wen et al. (2011) developed the early childhood teacher behavior observation (ECTBO) instrument in accordance with the National Association for the Education of Young Children's guidelines. The instrument combines a belief assessment with a thorough evaluation of existing classroom practices. The ECTBO examines a total of 17 specific teacher classroom behaviors, taking into account a wide range of classroom settings. (Leung et al., 2023) used this instrument to explore the pedagogical content knowledge of kindergarten teachers in the area of visual arts. They directly observed teachers' teaching behaviors, finding that teachers heavily relied on directive teaching methods when delivering visual arts lessons.

In Hong Kong, most kindergarten teachers in the field are still untrained in EVA. (Leung, 2018) pointed out that teacher education institutes prioritize child development, teaching methods, and the early childhood education curriculum over aesthetics and creativity. Visual arts modules are included in high diploma and bachelor's degree programs, but they account for just three out of more than 100 credits. Kindergarten teachers reported that because they had received only limited training in visual arts education, visual arts teaching was difficult to practice in a creative and play-based manner (Leung, 2018). Given these findings, this study used a mixed-methods approach to investigate Hong Kong kindergarten teachers' knowledge of and pedagogical approaches to visual arts. This study was guided by the following research questions (RQs):

1. What were kindergarten teachers' beliefs about early visual arts education?
2. What kinds of visual arts knowledge did kindergarten teachers possess or lack in their visual arts teaching?
3. How did kindergarten teachers deliver their pedagogical content knowledge in early visual arts in their classrooms?
4. What were the perceived challenges in teaching visual arts in kindergartens?

Research Methods

Participants

A survey was conducted to investigate in-service teachers' experiences, perceptions, and needs regarding their visual arts teaching. Hong Kong currently has around 13,486 in-service kindergarten teachers (Education Bureau, 2022). For the survey in this study, the sampling pool consisted exclusively of the 762 subsidized kindergartens listed in the official document of the Kindergarten Education Scheme (Education Bureau, 2022). These subsidized kindergartens are required by the Education Bureau to adopt an integrated learning curriculum (Curriculum Development Council, 2017). Regarding the sample selection, 40 kindergartens from the available pool were selected based on 40 random numbers generated by a random number generator. Initially, invitations were sent to the 40 principals, and 32 principals ultimately agreed to participate in the study. The 342 participants from the 32 kindergartens were in-service teachers in Hong Kong, 94% of whom were female. The mean age was 31.04 years old ($SD = 8.2$). Among the participants, 8.6% and 65.4% had attained postgraduate and undergraduate levels of education, respectively. The mean year of teaching experience was 9.06 years ($SD = 8.0$). In addition, 91% were full-day kindergarten teachers, while 9% were half-day teachers. Of the participants, 78% were class teachers, 8% were teaching assistants, 2% were specialist teachers, and 2% were school managers, including principals and deputy principals. The remaining 10% were interns or project assistants.

In addition, an interview study was conducted to investigate the kindergarten teachers' delivery of their pedagogical content knowledge in EVA in their classrooms. Teachers from both a full-day nursery school and a half-day kindergarten, which were among the 32 participating kindergartens, expressed their willingness to participate in the interview study. All the 12 class teachers were invited to in-depth interviews on an individual basis. Table 1 shows the background characteristics of the teacher participants.

Survey

The target participants were invited to complete an online survey using an Internet-accessible computer or cellphone

Table 1 Background Characteristics of the Teacher Participants

Teacher participant (pseudonym)	Gender	Educational qualification in early childhood education	Type of school
A	Female	Bachelor's level	Full-day nursery school
B	Female	Bachelor's level	Full-day nursery school
C	Female	High diploma level	Full-day nursery school
D	Female	High diploma level	Full-day nursery school
E	Female	High diploma level	Full-day nursery school
F	Female	Bachelor's level	Full-day nursery school
G	Female	Bachelor's level	Full-day nursery school
H	Female	High diploma level	Half-day kindergarten
I	Female	High diploma level	Half-day kindergarten
J	Female	Bachelor's level	Half-day kindergarten
K	Female	Bachelor's level	Half-day kindergarten
L	Female	Bachelor's level	Half-day kindergarten

at a time and place convenient for them. To facilitate their participation, we contacted the kindergarten principals by email, explaining the background of this project and asking them to forward consent forms to the participants as well as a hyperlink to the survey. The consent forms made it clear to the participants that their personal information would be kept strictly confidential and that all data presented in publications would be anonymized.

To design the survey instrument, a group of art practitioners and educators were invited to serve as a focus group, which defined the items for different themes (e.g., content knowledge and pedagogical content knowledge) and reviewed the items for the questionnaire. To analyze the survey findings, the quantitative data were exported from the Qualtrics online survey software into an Excel spreadsheet. We then generated descriptive and inferential statistics for analysis (Aron et al., 2006).

The survey included questions related to six major sections based on the previously presented literature review and the redesigned ECTBO framework (Leung et al., 2023): (1) *demographic data of teachers*; (2) *beliefs about EVA*; (3) *pedagogical content knowledge in EVA*; (4) *content knowledge in EVA*; (5) *implementation of EVA*; and (6) *perceived challenges of EVA*. Leung et al. (2023) adapted the ECTBO framework to explain the teaching behaviors in kindergarten classrooms within the context of EVAE. They aimed to assess teachers' pedagogical content knowledge in EVAE by employing this framework, originally designed as a general conceptual framework. To achieve this, they customized the definitions of ECTBO behaviors to align with specific teaching approaches in visual arts. For instance, one of the directive behaviors, referred to as "praise or reward," was defined as follows in the study: "Teacher gives rewards or makes general positive evaluative comments about children, their artworks and their behaviors ('Your picture is beautiful!' 'I like your design.' etc.)." One of the non-directive behaviors,

referred to as "scaffold," was defined as "Teacher provides a small amount of direction, guidance or assistance, while at the same time allowing children some choice and control in their visual arts activities. The idea is to add something new to what children are doing or to suggest new possibilities (e.g., teacher assists the child having difficulty opening a bottle of glue or asks, 'Would you like to add more decorations here?')" (Leung et al., 2023, p. 5).

In this study, these adapted definitions for EVA classrooms were included in the questionnaire used to evaluate teachers' behaviors. Table 2 provides an explanation of the survey's structural design and illustrates how the various components of the survey relate to the data presented in (Tables 3–7) within the findings section.

Interviews

Given the kindergarten teachers' feedback that visual arts instruction was challenging to implement creatively and playfully due to their limited training in visual arts education (Leung, 2018), we also ponder whether there are additional obstacles that might impede their effective implementation of EVAE. An in-depth interview protocol was designed to elicit the participating teachers' experiences, perceptions, and challenges regarding their visual arts teaching in Hong Kong kindergartens. The interview protocol included the following questions, e.g., (1) What are your beliefs about providing visual arts activities to children? (2) What kind of knowledge do you possess about the subject matter of visual arts? (3) What types of art have you introduced to children in your visual arts activities? (4) Are there any methods you employ to offer more artistic experiences to children or foster their creativity when teaching visual arts? (5) Have you encountered any challenges while teaching visual arts in kindergartens?

Table 2 Structural Design of the Survey

Dimensions	Specifications	Tables shown in the findings section
Demographic data of teachers	Age, gender, qualifications, year(s) of teaching experience, type of kindergarten, class level taught this year, mode of work, position of work, previous training in visual arts	
Beliefs about EVAE	<ul style="list-style-type: none"> • Beliefs about delivering visual arts activities to children • Importance of various aspects for delivering visual arts activities to children 	Table 3 Teachers' Beliefs and Perceived Importance of Delivering EVA Activities
Pedagogical knowledge in EVA classrooms	Frequency of performing behaviors in visual arts classrooms based on the ECTBO instrument (Wen et al., 2011)	Table 4 Kindergarten Teachers' Self-Reported Directive vs. Non-Directive Teaching Behaviors in EVA Lessons
Content knowledge of EVA	<ul style="list-style-type: none"> • Understanding of elements of visual arts • Understanding of historical periods of visual arts • Frequency of delivering forms of visual arts activity 	Table 5 Teacher's Self-Assessed Content Knowledge of Visual Arts Table 6 Self-Reported Frequency of EVA Activities per Month
Teachers' perceived challenges in EVA	Challenges of delivering visual arts in kindergarten classrooms	Table 7 Teachers' Perceived Challenges in EVAE

Follow-up questions were asked to clarify or elaborate on the participants' responses. Each interview lasted for 40 min, and approximately 480 min of interview data were collected. Our research involved conducting a thematic analysis of the qualitative data, with the objectives of identifying, analyzing, and documenting patterns inherent in the data. This analytical process comprised six distinct phases: acquainting ourselves with the gathered data, creating initial codes, exploring thematic patterns, reviewing identified themes, defining and naming those themes, and ultimately generating a comprehensive report (Braun & Clarke, 2006). Initially, we coded and categorized the qualitative responses into main themes, and the percentages presented in the results were based on the frequency of each theme. To minimize researcher bias, two researchers independently analyzed the data. The first researcher examined the transcripts to identify codes related to the teachers' EVAE beliefs and practices. The researcher calculated the frequency of different codes in the transcripts, grouped similar codes, and further summarized them into sub-themes. The second researcher independently reviewed and verified the categorizations, and both researchers then discussed any discrepancies in their analyses. Through these discussions, they reached a consensus on the final categorizations of the interview data.

Findings

The quantitative findings of this study were derived from the survey, which measured several dimensions. These dimensions included (1) *beliefs about EVAE*, (2) *pedagogical*

knowledge in EVA classrooms, (3) *content knowledge in EVA*, and (4) *teachers' perceived challenges in EVA*. More specific details regarding these findings will be discussed in the following sections.

Beliefs About EVAE

Overall, the teachers expressed the belief that EVA activities should primarily focus on fostering children's creativity ($M = 3.64$, $SD = 0.69$) rather than delivering knowledge ($M = 2.83$, $SD = 0.56$), demonstrating skills ($M = 3.11$, $SD = 0.55$), or assessing abilities ($M = 3.18$, $SD = 0.52$). As shown in Table 3, six survey items were designed to investigate the beliefs of the kindergarten teachers regarding the reasons for delivering EVA activities. The teachers responded by rating the statements on a Likert scale, ranging from 1 = "strongly disagree" to 4 = "strongly agree." Most of them agreed or strongly agreed on the positive influences ($M = 3.38$ or above) that EVA could bring to young children. In particular, 94.75% (73.18% strongly agree and 21.57% agree) supported the delivery of EVA activities for motivating children's creativity. Moreover, 93.26% (63.64% strongly agree and 29.62% agree) claimed that they delivered EVA activities to allow children to appreciate arts in different ways.

Table 3 also shows nine statements designed to investigate the beliefs of the kindergarten teachers regarding the elements of delivering EVA activities. Over 94.18% agreed or strongly agreed with all the statements. Most of them recognized that these elements were essential for teaching young children EVA (e.g., providing materials [$M = 3.53$,

$SD=0.57$] and offering children choices to create or express [$M=3.55$, $SD=0.54$]. The importance of EVA motivated the teachers to carry out EVA activities with young children. Specifically, 99.41% claimed that EVAE required both adequate time ($M=3.74$, $SD=0.45$) and space ($M=3.69$, $SD=0.48$) for children's art-making processes. By contrast, less-favorable responses were given to some elements of delivering EVA activities, including delivering knowledge (23.68% unimportant), demonstrating skills (10.53% unimportant), and assessing children's abilities (7.6% unimportant).

Pedagogical Content Knowledge in EVA Classrooms

Meanwhile, when compared to non-directive approaches, the teachers reported using directive teaching approaches less frequently in EVA. In this section, the redesigned ECTBO framework was used to investigate specific teaching approaches in visual arts kindergarten classrooms (Leung et al., 2023). For the 14 teaching behaviors listed, the teachers gave answers regarding how often they adopted each of them in their EVA lessons. Eight were directive behaviors, and the remaining six were non-directive. The teachers responded by rating their frequency of adopting each item

within a period of 1 month. They rated the statements on a Likert scale, ranging from 0 = "never" to 4 = "every day."

As Table 4 shows, compared to the non-directive approaches, the teachers reported a lower behavioral frequency of directive teaching approaches in EVA. Threatening ($M=0.94$, $SD=0.91$) and doing for ($M=0.99$, $SD=0.95$) were avoided by most teachers, with 36.20% and 35.69% reporting that they never carried out these respective activities. However, some teachers threatened (41.25%), punished (40.88%), and did for children (39.23%) once a month or less. Regarding the directive teaching behaviors of demonstrating, giving directions, and asking closed questions, these were performed once a week by 48.97%, 45.59%, and 34.42% of the teachers, respectively. The most frequent directive approach was praising or rewarding children, and 35.69% of the teachers carried out this approach every day.

The teachers were relatively supportive of non-directive teaching approaches. Some non-directive behaviors, such as observing (43.49%), asking open questions (42.77%), and scaffolding children (35.29%), were used every day. However, 36.2% of the participants reported that they never encouraged children in EVA lessons ($M=2.99$, $SD=0.90$). While 39.12% reported that they offered choice to children

Table 3 Teachers' Beliefs and Perceived Importance of Delivering EVA Activities (N = 342)

	Strongly disagree (1)	Disagree (2)	Agree (3)	Strongly agree (4)	<i>M (SD)</i>
My belief about delivering early childhood visual arts activities is that it.					
Motivates children's creativity	3.50%	1.75%	21.57%	73.18%	3.64 (0.69)
Allows children to appreciate arts in different ways	3.23%	3.52%	29.62%	63.64%	3.54 (0.72)
Encourages children to express their feelings using arts as a medium	2.63%	2.34%	34.21%	60.82%	3.53 (0.68)
Encourages children to share their viewpoints and thoughts	2.94%	2.35%	34.71%	60.00%	3.52 (0.69)
Respects the personal character of each child	2.63%	4.39%	32.75%	60.23%	3.51 (0.71)
Promotes children's cognitive development	1.75%	2.92%	50.58%	44.74%	3.38 (0.63)
	Very unimportant (1)	Unimportant (2)	Important (3)	Very important (4)	<i>M (SD)</i>
The importance of delivering early childhood visual arts activities lies in.					
Providing adequate time	0.00%	0.58%	24.56%	74.85%	3.74 (0.45)
Providing sufficient space	0.00%	0.59%	29.91%	69.50%	3.69 (0.48)
Exhibiting children's artworks	0.00%	1.75%	32.75%	65.50%	3.64 (0.52)
Encouraging children's observation	0.00%	0.58%	39.94%	59.48%	3.59 (0.50)
Offering children choices to create or express	0.00%	2.35%	40.59%	57.06%	3.55 (0.54)
Providing materials	0.00%	3.53%	40.29%	56.18%	3.53 (0.57)
Assessing children's abilities	0.58%	7.60%	65.50%	26.32%	3.18 (0.52)
Demonstrating skills	0.00%	10.53%	68.42%	21.05%	3.11 (0.55)
Delivering knowledge	0.58%	23.68%	67.84%	7.89%	2.83 (0.56)

The table displays the mean and SD values in descending order

Table 4 Kindergarten Teachers' Pedagogical Content Knowledge through Self-Reported Directive vs. Non-Directive Teaching Behaviors in EVA Lessons (N=342)

	Never (0)	Once a month or less (1)	Once a week (2)	More than once a week (3)	Every day (4)	M (SD)
Directive teaching behaviors						
Praise/reward	0.29%	2.95%	20.35%	40.71%	35.69%	3.09 (0.84)
Give information	1.18%	10.32%	39.82%	38.05%	10.62%	2.47 (0.86)
Demonstrate	2.65%	15.63%	48.97%	27.43%	5.31%	2.17 (0.85)
Ask closed questions	8.01%	26.11%	34.42%	26.41%	5.04%	1.94 (1.02)
Give directions	6.47%	23.24%	45.59%	21.18%	3.53%	1.92 (0.92)
Punish	29.12%	40.88%	19.71%	10.00%	0.29%	1.11 (0.95)
Do for	35.69%	39.23%	16.02%	7.96%	0.59%	0.99 (0.95)
Threaten	36.20%	41.25%	16.02%	5.64%	0.89%	0.94 (0.91)
Non-directive teaching behaviors						
Observe children	0.89%	2.37%	14.50%	38.76%	43.49%	3.22 (0.84)
Ask open questions	0.59%	3.54%	15.93%	37.17%	42.77%	3.18 (0.87)
Scaffold	0.29%	3.53%	18.53%	42.35%	35.29%	3.09 (0.84)
Encourage	36.20%	41.25%	16.02%	5.64%	0.89%	2.99 (0.90)
Offer choice	1.47%	9.71%	26.76%	39.12%	22.94%	2.72 (0.97)
Play with children	0.88%	10.59%	31.18%	36.76%	20.59%	2.66 (0.95)

The table displays the mean and SD values in descending order

($M=2.72$, $SD=0.97$), 11.18% never offered choice to children or did so once a month or less.

Content Knowledge in EVA

Based on the survey data, it was found that the kindergarten teachers had an imbalanced knowledge of the fundamental elements of visual arts and a limited understanding of art history. The survey examined their self-assessed familiarity with art-related content knowledge. Their levels of familiarity regarding art elements were rated on a scale of 1 to 4, ranging from “very unfamiliar” to “very familiar.” The art-related content knowledge included basic artistic elements and the history of visual arts. As Table 5 shows, the basic elements of visual arts covered a wide range of aspects: colors ($M=3.10$, $SD=0.45$), shapes ($M=3.07$, $SD=0.44$), lines ($M=3.06$, $SD=0.47$), patterns ($M=3.00$, $SD=0.48$), space ($M=2.86$, $SD=0.54$), textures ($M=2.82$, $SD=0.53$), brightness ($M=2.79$, $SD=0.59$), composition ($M=2.73$, $SD=0.60$), and form ($M=2.65$, $SD=0.58$). Of the nine basic visual arts elements, the teachers reported that they were familiar with colors (80.06% acquired and 15.25% fully acquired), shapes (81.29% acquired and 12.87% fully acquired), lines (78.36% acquired and 13.74% fully acquired), and patterns (79.53% acquired and 10.53% fully acquired). These four elements, especially colors, are common in EVA activities designed for young children. Form and composition were the top two elements with which the teachers were unfamiliar: 37.13% and 30.99% of

the respondents stated that they had acquired these respective elements “a bit.”

Along with the basic elements of visual arts, art history forms an important kind of visual arts content knowledge. The teachers' levels of familiarity with art history were also rated on a scale of 1 to 4, ranging from “very unfamiliar” to “very familiar.” All reported that they were unfamiliar with different periods of art history ($M=2.23$ or below). They rated 11 periods of art history (Renaissance, Baroque, Impressionism, Pop Art, etc.) according to their levels of understanding (Table 5). In terms of their responses, 74.87% claimed that they had not fully acquired knowledge—or had acquired just a bit of knowledge—of these schools of thought in art history. The teachers were relatively more familiar with Abstract Expressionism (31.49% acquired), Renaissance (31.09% acquired), Pop Art (30.61% acquired), and Realism (30.61% acquired). They reported that they had not fully acquired knowledge—or had acquired just a bit of knowledge—of three schools of thought: Post-Impressionism (66.08% acquired a bit and 20.47% not fully acquired), Expressionism (62.28% acquired a bit and 21.64% not fully acquired), and conceptual arts (62.97% acquired a bit and 19.24% not fully acquired).

Additionally, they reported infrequent implementation of a wide range of visual arts activities. As shown in Table 6, their frequency of conducting EVA activities was rated on a scale of 0 to 4, ranging from “never” to “every day.” All reported that they conducted EVA activities less than once a week ($M=1.75$ or below; i.e., less than four times a month).

Table 5 Teachers' Self-Assessed Content Knowledge in Visual Arts (N=342)

	Very unfamiliar (1)	Unfamiliar (2)	Familiar (3)	Very familiar (4)	<i>M (SD)</i>
To what extent are you familiar with the following basic elements in visual arts?					
Color	0.29%	4.40%	80.06%	15.25%	3.10 (0.45)
Shape	0.29%	5.56%	81.29%	12.87%	3.07 (0.44)
Line	0.29%	7.60%	78.36%	13.74%	3.06 (0.47)
Pattern	0.29%	9.65%	79.53%	10.53%	3.00 (0.48)
Space	0.59%	21.11%	70.38%	7.92%	2.86 (0.54)
Texture	0.58%	22.81%	70.47%	6.14%	2.82 (0.53)
Brightness	0.58%	28.07%	63.16%	8.19%	2.79 (0.59)
Composition	1.46%	30.99%	61.11%	6.43%	2.73 (0.60)
Form	1.17%	37.13%	57.60%	4.09%	2.65 (0.58)
To what extent are you familiar with the following schools of thought in art history?					
Pop art	15.45%	49.85%	30.61%	4.08%	2.23 (0.76)
Abstract expressionism	15.16%	50.73%	31.49%	2.62%	2.22 (0.73)
Realism	15.16%	52.19%	30.61%	2.04%	2.20 (0.71)
Renaissance	17.01%	50.73%	31.09%	1.17%	2.16 (0.71)
Impressionism	18.13%	54.68%	24.27%	2.92%	2.12 (0.73)
Surrealism	18.18%	57.77%	21.11%	2.93%	2.09 (0.71)
Romanticism	19.01%	56.73%	22.51%	1.75%	2.07 (0.69)
Conceptual art	19.24%	62.97%	16.03%	1.75%	2.00 (0.65)
Baroque	21.35%	58.77%	19.01%	0.88%	1.99 (0.66)
Expressionism	21.64%	62.28%	14.91%	1.17%	1.96 (0.64)
Post-impressionism	20.47%	66.08%	11.99%	1.46%	1.94 (0.62)

The table displays the mean and SD values in descending order

Table 6 Self-Reported Frequency of EVA Activities per Month (N=342)

	Never (0)	Once a month or less (1)	Once a week (2)	More than once a week (3)	Every day (4)	<i>M (SD)</i>
Drawing	5.83%	39.07%	33.53%	17.78%	3.79%	1.75 (0.94)
Photography	22.74%	32.94%	13.70%	19.53%	11.08%	1.63 (1.32)
Collage art	10.85%	50.44%	24.34%	14.08%	0.29%	1.43 (0.87)
Paper cutting	13.45%	49.71%	22.51%	12.28%	2.05%	1.40 (0.94)
Video	28.28%	39.94%	16.03%	13.70%	2.04%	1.21 (1.06)
Junk art	27.11%	55.98%	11.66%	4.66%	0.58%	0.96 (0.79)
Printing	42.35%	50.88%	5.88%	0.88%	0.00%	0.65 (0.63)
Sketching	52.48%	40.82%	5.83%	0.29%	0.58%	0.56 (0.67)
Sculpting	60.53%	36.26%	2.63%	0.58%	0.00%	0.43 (0.58)

The table displays the mean and SD values in descending order

Three activities had a relatively higher weekly usage: drawing (33.53%), paper cutting (22.51%), and collage art (24.34%). Overall, drawing ($M=1.75$, $SD=0.94$), photo taking ($M=1.63$, $SD=1.32$), and collage art ($M=1.43$, $SD=0.87$) were the most common activities chosen by the teachers. Over 50% held drawing activities at least once a week. Indeed, 17.78% of them did this more than once a week, while 3.79% did it every day. However, 60.53% and 52.48% of the teachers never carried out sculpting or

sketching activities, respectively, with young children, while 36.26% and 40.82% carried out these respective activities once a month or less. These were the least common arts activities of the kindergarten teachers.

Teachers may find it challenging to regularly provide diverse visual arts activities if they lack knowledge of the fundamental elements and history of visual arts. However, the creation of artworks is influenced by the principles rooted in these basic elements, and understanding the

historical context of art is crucial for grasping its philosophical paradigm shifts over time. Thus, both the basic elements and history of visual arts are important in EVAE.

Perceived Challenges in EVAE

The teachers faced challenges due to their lack of content knowledge, which could be attributed to the limited education and professional development opportunities in visual arts. Table 7 shows the teachers' responses concerning the challenges of teaching EVA to young children in kindergarten settings. A four-point Likert scale was adopted, ranging from 1 = "very unlikely" to 4 = "very likely." The following items were seen as likely or very likely to be a challenge: receiving an inadequate training in visual arts (94.46%, $M=3.31$, $SD=0.57$), acquiring a limited knowledge of visual arts (84.84%, $M=3.09$, $SD=0.65$), relying too much on a step-by-step teaching approach (81.92%, $M=3.05$, $SD=0.65$), being equipped with limited skills and tools in visual arts (81.63%, $M=3.01$, $SD=0.64$), and having a very tight teaching schedule in kindergarten (81.28%, $M=3.14$, $SD=0.75$).

Four themes were derived from the qualitative findings in the interview study: (1) *positive beliefs and values toward EVAE*, (2) *minimal pedagogical content knowledge in EVA classrooms*, (3) *lack of content knowledge of EVAE*, and (4) *challenges faced in implementing EVAE*.

Positive Beliefs and Values Toward EVAE

While teachers from the survey findings held positive beliefs and perceived the importance of delivering EVA activities, the interview participants also held positive beliefs toward EVAE. As one teacher stated, "when children have more chance to create their arts, they have ways to express their negative feelings. They seem to have a more stable emotional status. They become less easily irritated" (Teacher B). Another teacher claimed that they delivered EVA activities to allow children to appreciate arts in different ways:

Art provides a way to express emotions and communicate our own ideas. . . . Masterpiece appreciation activities let children learn how to appreciate various types of arts. Sometimes, when children finish their artworks, they are allowed to share their works with others. This allows them to present their own ideas and, at the same time, learn to respect and appreciate others' creations. (Teacher A)

In implementing EVA activities, the teachers also stressed the importance of child-centeredness for children's art-making processes:

My stance is to not directly give instructions to children. . . . We cannot force them to follow our steps. We can provide some references for them and guide them to explore. We encourage them to observe the environment and make use of their daily experiences to create their artworks. Unlike adults, children have high levels of creativity and do not have a frame to limit themselves. (Teacher C)

Minimal Pedagogical Content Knowledge in EVA Classrooms

Although teachers reported that they tend to perform non-directive teaching methods as their pedagogical content knowledge in EVA classrooms, the teachers in the interviews provided explanations for their insufficient implementation of non-directive teaching methods for different reasons:

Although we set up quite a lot of different materials, we seldom ask children to choose. We are afraid that different children will choose various materials or that all children will choose a single kind of source that will mess up the classroom. (Teacher G)

The process of art making requires a long period of time. You need to provide enough time for children to do it. (Teacher D)

Table 7 Teachers' Perceived Challenges in EVAE (N=342)

	Very unlikely (1)	Unlikely (2)	Likely (3)	Very likely (4)	$M(SD)$
Receiving inadequate training in visual arts	0.00%	5.54%	57.73%	36.73%	3.31 (0.57)
Having a very tight teaching schedule in kindergarten	1.46%	17.25%	46.78%	34.50%	3.14 (0.75)
Lack of attention from school managers to visual arts teaching	21.87%	44.90%	30.61%	2.62%	3.14 (0.78)
Acquiring limited knowledge of visual arts	0.87%	14.29%	59.48%	25.36%	3.09 (0.65)
Relying too much on a step-by-step teaching approach	0.29%	17.78%	58.89%	23.03%	3.05 (0.65)
Being equipped with limited skills and tools in visual arts	0.58%	17.78%	61.22%	20.41%	3.01 (0.64)
Overemphasizing handicrafts in teacher education	0.87%	24.49%	54.23%	20.41%	2.94 (0.69)
Lack of attention from parents to children's learning in visual arts	2.92%	22.74%	58.60%	15.74%	2.87 (0.70)

The table displays the mean and SD values in descending order

Lack of Content Knowledge of EVAE

Similar to the survey findings, the teachers reported in the interviews that they lacked arts-related content knowledge in visual arts to design and implement EVA activities. According to one teacher, “I think that most kindergarten teachers have a little but not adequate knowledge about visual arts. Children’s development of arts is important. Teachers with professional knowledge in this subject would better facilitate their development” (Teacher E). Another teacher stated the following:

I have not received any visual arts training since my Secondary Three (i.e., Form 3 of the Hong Kong secondary education). I studied science subjects for my advanced-level examination. After that, there are few sessions about visual arts in the bachelor’s degree in early childhood education, which were about paper-cutting and printing skills. These sessions do not cover art history at all. I felt very anxious when our principal asked us to conduct masterpiece appreciation, which relates to art history that I don’t know. (Teacher F)

Challenges Faced in Implementing EVAE

According to the survey results, teachers indicated their need for more opportunities for professional development and education in visual arts. The teachers in the interviews highlighted the difficulties they encountered when trying to implement EVAE. They specifically mentioned that visual arts were undervalued, resulting in inadequate professional training in this area.

My kindergarten does not value visual arts. So, I do not have much chance and time to explore what other arts activities I could do with children. (Teacher I)
Kindergarten teachers lack the knowledge needed for teaching visual arts as a subject. Unlike most primary and secondary school teachers, kindergarten teachers did not receive professional training in visual arts. It makes teaching arts difficult for us. (Teacher L)

Discussion

In this study, the objective was to provide the academic community with the first understanding of the current state of EVAE content knowledge and pedagogical content knowledge proposed within the Hong Kong kindergarten teaching community. It eludes the potential difficulties they encounter to enable future efforts and policy decisions informed by empirical data. The results indicated that Hong Kong kindergarten teachers generally demonstrated pedagogical content knowledge through non-directive teaching in early

visual arts classrooms. However, they exhibited gaps in their understanding of different forms of EVA and encountered challenges in effectively teaching visual arts.

This study provides an overview of EVAE in Hong Kong, specifically in relation to kindergarten teachers’ content knowledge, pedagogical knowledge, and challenges in this area of early childhood education. The survey revealed that some teachers struggled to introduce different genres of visual arts to young children, despite holding positive attitudes toward EVAE. Meanwhile, it indicated that teachers tend to favor non-directive teaching methods, in contrast to previous research that teachers frequently employ direct teaching approaches. In this study, the findings revealed encouraging changes in teachers’ practices, indicating a positive shift towards embracing EVAE. However, the teachers’ confidence in their content knowledge hinders them from fully implementing pedagogical strategies in their teaching. The interviews echoed the survey findings, indicating that most of the kindergarten teachers lacked sufficient visual arts content knowledge, such as basic artistic elements, art history, and art forms. Consequently, they did not effectively implement EVAE to expand children’s interests and experiences in exploring visual arts. Although the teachers reported applying their pedagogical knowledge in the classroom, their pedagogical content knowledge was limited by their insufficient content knowledge, which negatively impacted their visual arts self-efficacy (Dennee et al., 2023).

Although several overseas studies have shown that arts participation has a strong positive influence on children’s learning (Menzer, 2015), few studies have focused on arts-related education in Hong Kong. In recent decades, local early childhood scholars have instead emphasized language and cognitive development. By contrast, this study makes a valuable contribution to the advancement of early childhood education curriculum by advocating for the inclusion of visual arts as a key priority in children’s learning experiences. In particular, the importance of arts education in Hong Kong is now officially recognized, and the concepts of STEAM (i.e., an integrated learning approach to science, technology, engineering, arts, and mathematics) have been discussed and applied in secondary, primary, and even kindergarten education (Reitenbach, 2015). Indeed, in addition to facilitating the production of innovative works in an aesthetic manner, digital arts have the potential to occupy a new position as part of the “A” in STEAM. Despite this, arts education in early childhood has received little attention in Hong Kong (Leung, 2018). This study has brought a fresh perspective to this area of education by studying Hong Kong kindergarten teachers’ knowledge of and pedagogies in visual arts, including both fine arts (Bresler, 1998) and media arts (Fleer, 2016). Hence, it is advisable for kindergarten teachers to broaden their horizons and enhance the

scope of visual arts education by seeking greater exposure and gaining more experience in fine arts and media arts.

The most critical aspect for the success of EVAE is advocacy of teacher education in visual arts. The studies conducted by (Lindsay, 2021) and (Denee, 2022) revealed that graduate teachers teaching visual arts held negative beliefs and a negative self-efficacy regarding visual arts pedagogies, which were attributed to the limited and insufficient visual arts content of their pre-service coursework. These findings supported previous research identifying a decline in visual arts coursework in pre-service contexts (Moilanen & Mertala, 2020). It is, therefore, imperative for teacher education programs to incorporate aspects of EVAE such as material physicality and the historical context of visual arts into their pre-service coursework.

Finally, EVAE cannot be well implemented without the support of school management. According to Probine (2016), when the leader in an early childhood education setting showed a commitment to using visual arts as a learning tool, the teachers tended to develop strong visual arts teaching strategies. By contrast, when leaders possess insufficient confidence, skills, and experience in arts education, it is likely that the quality of the provided arts education will be compromised (Lindsay, 2016). School managers should strive to enhance their understanding of EVAE in order to effectively collaborate with their teaching staff within schools.

Conclusion

This study provides the research and teaching community with the first data-informed state of early childhood educators in the Hong Kong setting, showing the need to develop their teaching practices. However, this study has several notable limitations that should be highlighted. We encountered a limitation in our study regarding the effectiveness of the interview tool we used. Although the quantitative aspect of the tool can still be utilized, it would be advantageous to refine it further. This refinement could involve incorporating triangulation methods or establishing a more specific objective, which would contribute to enhancing the statistical findings. Also, this study only revealed a limited understanding of teachers' self-reported competencies and perceptions on EVAE in a linear manner. To explore the relationships between teachers' self-efficacy, content knowledge, and teaching approaches, it is recommended that future researchers utilize inferential statistics analysis. In the long run, professional development programs should be designed as interventions that investigate how teacher training can be helpful in improving teachers' subject-matter knowledge in EVA.

The results of this research could have a substantial impact on approaches to early childhood visual arts education in Hong Kong. The findings could inspire the design of a teacher education program in visual arts that is adaptable to the needs of teachers and is conducted in collaboration with existing teacher education institutes and kindergartens in Hong Kong. This study has the potential to improve the quality of visual arts teaching among local kindergarten teachers and provide insights for educational policymaking in Hong Kong. The study's examination of EVA in Hong Kong could have wider implications for other parts of the Asia-Pacific region. The insights gained from this study may also offer valuable lessons for Western educators, policymakers, and researchers.

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Declarations

Conflict of interest There are no potential conflicts of interest.

Ethical Approval The study data cannot be accessed for ethical reasons (e.g., protecting the participants' identities). This research was carried out in full compliance with ethical guidelines and with the approval of the institutional ethics committee. All participants signed ethical consent forms.

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References

- Aron, A., Aron, E. N., & Coups, E. J. (2006). *Statistics for psychology* (4th ed.). Pearson Prentice Hall.
- Bautista, A., Moreno-Núñez, A., Koh, S. F., Amsah, F., & Bull, R. (2018). Arts related practices in preschool education: An Asian perspective. *Early Childhood Research Quarterly*, 45(4), 277–288. <https://doi.org/10.1016/j.ecresq.2017.12.005>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp0630a>
- Bresler, L. (1993). Three orientations to arts in the primary grades: Implications for curriculum reform. *Arts Education Policy Review*, 94(6), 29–34. <https://doi.org/10.1080/10632913.1993.9936939>

- Bresler, L. (1998). "Child art", "fine art", and "art for children": The shaping of school practice and implications for change. *Arts Education Policy Review*, 100(1), 3–10. <https://doi.org/10.1080/10632919809599444>
- Education Bureau. (2022). *Kindergarten education: Figures and statistics*. <https://www.edb.gov.hk/en/about-edb/publications-stat-figures/kg.html>.
- Clark, B., & Grey, A. (2013). Positioning the arts in early childhood education: Fostering the creative spirit. In B. Clark, A. Grey, & L. Terreni (Eds.), *Kia Tipu Te Wairua Toi—Fostering the creative spirit: Arts in early childhood education* (pp. 1–12). Pearson.
- Curriculum Development Council. (2017). *Kindergarten education curriculum guide*. Curriculum Development Council.
- Denee, R. (2022). *Visual arts in ECE: Strengthening intentional teaching through a network professional learning community* [Doctoral dissertation, Te Herenga Waka—Victoria University of Wellington]. Wellington.
- Denee, R., Lindsay, G., & Probine, S. (2023). Visual arts self-efficacy: Impacts and supports for early childhood teachers. *Early Childhood Education Journal*. <https://doi.org/10.1007/s10643-023-01489-5>
- Eckhoff, A. (2008). The importance of art viewing experiences in early childhood visual arts: The exploration of a master art teacher's strategies for meaningful early arts experiences. *Early Childhood Education Journal*, 35(5), 463–472. <https://doi.org/10.1007/s10643-007-0216-1>
- Eckhoff, A. (2011). Creativity in the early childhood classroom: Perspectives of preservice teachers. *Journal of Early Childhood Teacher Education*, 32(3), 240–255. <https://doi.org/10.1080/10901027.2011.594486>
- Eckhoff, A. (2012). Conversational pedagogy: Exploring interactions between a teaching artist and young learners during visual arts experiences. *Early Childhood Education Journal*, 41(5), 365–372. <https://doi.org/10.1007/s10643-012-0567-0>
- Epstein, A. S. (2001). Thinking about art: Encouraging art appreciation in early childhood settings. *Young Children*, 56(1), 38–43.
- Falloon, G. (2013). Young students using iPads: App design and content influences on their learning pathways. *Computers and Education*, 68(1), 505–521. <https://doi.org/10.1016/j.compedu.2013.06.006>
- Fleer, M. (2016). Theorising digital play: A cultural–historical conceptualisation of children's engagement in imaginary digital situations. *International Research in Early Childhood Education*, 7(2), 75–90. <https://doi.org/10.4225/03/584e7151533f7>
- Garvis, S. (2009). Establishing the theoretical construct of pre-service teacher self-efficacy for arts education. *Australian Journal of Music Education*, 1(1), 29–37.
- Garvis, S. (2012). Exploring current arts practice in kindergartens and preparatory classrooms. *Australasian Journal of Early Childhood*, 37(4), 86–93. <https://doi.org/10.1177/183693911203700412>
- Garvis, S., & Pendergast, D. (2011). An investigation of early childhood teacher self-efficacy beliefs in the teaching of arts education. *International Journal of Education & the Arts*, 12(9), 1–15.
- Grossman, P. L., Wilson, S. M., & Shulman, L. S. (1989). Teachers of substance: Subject matter knowledge for teaching. In M. C. Reynolds (Ed.), *Knowledge base for the beginning teacher* (pp. 23–46). Pergamon.
- Hanna, W. (2014). A Reggio-inspired music atelier: Opening the door between visual arts and music. *Early Childhood Education Journal*, 42(4), 287–294. <https://doi.org/10.1007/s10643-013-0610-9>
- Hudson, S. M. (2006). Exploring first-year pre-service teachers' confidence to teach art education. In P. Jeffrey (Ed.), *AARE 2005 education research*. Parramatta.
- Jalongo, M. R. (1990). The child's right to the expressive arts: Nurturing the imagination as well as the intellect. *Childhood Education*, 66(1), 195–201. <https://doi.org/10.1080/00094056.1990.10522518>
- Jowett, E. L., Moore, D. W., & Anderson, A. (2012). Using an iPad-based video modelling package to teach numeracy skills to a child with an autism spectrum disorder. *Developmental Neurorehabilitation*, 15(4), 304–312. <https://doi.org/10.3109/17518423.2012.682168>
- Kim, H. K., & Han, H. S. (2015). Understanding early childhood teachers' beliefs and self-stated practices about social competence instructional strategies in the context of developmentally appropriate practice: A comparison of pre-service and in-service teachers in the United States. *European Early Childhood Education Research Journal*, 23(4), 476–496. <https://doi.org/10.1080/1350293X.2015.1087152>
- Klopper, C., & Power, B. (2010). Illuminating the gap: An overview of classroom-based arts education research in Australia. *International Journal of Education through Art*, 6(3), 293–308. https://doi.org/10.1386/eta.6.3.293_1
- Leung, S. K. Y. (2018). An exploratory study of early visual arts education in two Hong Kong kindergartens. *Journal of Research in Childhood Education*, 32(4), 392–403. <https://doi.org/10.1080/02568543.2018.1498414>
- Leung, S. K. Y., Wu, J., Lam, Y., & Ho, H. T. (2023). An explanatory study of kindergarten teachers' teaching behaviours in their visual arts classrooms. *Teaching and Teacher Education*. <https://doi.org/10.1016/j.tate.2023.104018>
- Lindsay, G. (2015). "But I'm not artistic": How teachers shape kids' creative development. *The Conversation*. <https://theconversation.com/but-im-not-artistic-how-teachers-shape-kids-creative-development-34650>.
- Lindsay, G. (2016). Do visual art experiences in early childhood settings foster educative growth or stagnation? *The International Art in Early Childhood Research Journal*, 5(1), 1–14.
- Lindsay, G. (2021). Visual arts pedagogy in early childhood contexts: The baggage of self-efficacy beliefs, pedagogical knowledge and limited pre-service training. *Australasian Journal of Early Childhood*, 46(1), 80–92. <https://doi.org/10.1177/1836939120979061>
- Marsh, J. (2012). Purposes for literacy in children's use of the online virtual world Club Penguin. *Journal of Research in Reading*, 37(2), 179–195. <https://doi.org/10.1111/j.1467-9817.2012.01530.x>
- McArdle, F. (2012). New maps of learning for quality art education: What pre-service teachers should learn and be able to do. *Australian Educational Researcher*, 39(1), 91–106. <https://doi.org/10.1007/s13384-012-0051-2>
- McArdle, F. (2016). "Art education" in the early years: Learning about, through and with art. *International Art in Early Childhood Research Journal*, 5(1), 1–15.
- McMullen, M. B., Elicker, J., Goetze, G., Huang, H. H., Lee, S. M., Mathers, C., Wen, X., & Yang, H. (2006). Using collaborative assessment to examine the relationship between self-reported beliefs and the documentable practices of preschool teachers. *Early Childhood Education Journal*, 34(1), 81–91. <https://doi.org/10.1007/s10643-006-0081-3>
- Menzer, M. (2015). *The arts in early childhood: Social and emotional benefits of arts participation*. NEA Office of Research & Analysis
- Moilanen, J. H., & Mertala, P. O. (2020). The meaningful memories of visual arts education for preservice generalist teachers: What is remembered, why, and from where? *International Journal of Education & the Arts*, 21(12), 1–24.
- Probine, S. (2016). Choosing the good things? Reconceptualising and reopening discourses surrounding visual arts pedagogies in early childhood education. *International Art in Early Childhood Research Journal*, 5(1), 1–11.

- Reitenbach, G. (2015). From STEM to STEAM education. *Power*, 159(1), 6.
- Rosario, J., & Collazo, E. (1981). Aesthetic codes in context: An exploration in two preschool classrooms. *Journal of Aesthetic Education*, 15(1), 71–82.
- Rudolph, S., & Wright, S. (2015). Drawing out the value of the visual: Children and young people theorizing time through art and narrative. *Journal of Curriculum Studies*, 47(4), 486–507. <https://doi.org/10.1080/00220272.2015.1006685>
- Shulman, L. S. (1986). Those who understand: Knowledge growth in teaching. *Educational Researcher*, 15(2), 4–14. <https://doi.org/10.3102/0013189X015002004>
- Smyth, J., & Davis, D. (2016). Visual arts education: The potential for teacher delight and despair. *International Art in Early Childhood Research Journal*. <https://doi.org/10.25911/5d70f00bd97dc>
- Stephen, C., & Plowman, L. (2014). Digital Play. In S. Edwards, M. Blaise, & L. Brooker (Eds.), *SAGE handbook of play and learning in early childhood* (pp. 330–341). SAGE.
- Terreni, L. (2011). Interactive whiteboards, art and young children. *Computers in New Zealand Schools: Learning, Teaching, Technology*, 23(1), 78–100.
- Wen, X., Elicker, J. G., & McMullen, M. B. (2011). Early childhood teachers' curriculum beliefs: Are they consistent with observed classroom practices? *Early Education & Development*, 22(6), 945–969. <https://doi.org/10.1080/10409289.2010.507495>
- Wright, S. (2003). *The arts, young children, and learning*. Allyn & Bacon.
- Wright, S. (2014). The voice of art: Understanding children's graphic-narrative-enactive communication. In D. Machin (Ed.), *Visual communication* (pp. 515–534). De Gruyter.

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